AMENDMENTS TO THE CLAIMS

1. (Currently amended) A telecommunications apparatus, comprising:

a multi-finger Rake receiver having a serial stage and a parallel stage having parallel branches, the parallel branches being weighted by weighting factors; [[and]]

a single bit quantizer on the serial stage, the single bit quantizer having single bit output; and

the weighting factors being generated by estimated probabilities of the single bit output from the single bit quantizer.

2. (Currently amended) The telecommunications apparatus of claim 1 in which:

~~parallel branches of the Rake receiver are weighted;~~

pulse samples output from the single bit quantizer have estimated probabilities corresponding to different delays; and

the weighting factors used in the Rake receiver are derived from the estimated probabilities of the corresponding pulse samples.

3. (Original) The telecommunications apparatus of claim 2 in which the weighting factors are derived from a ratio of the estimated probability of a corresponding sample at the nth delay and the estimated probability that there is not a corresponding sample at the nth delay.

4. (Original) The telecommunications apparatus of claim 1 used with on off keying encoding/modulation scheme.

5. (Original) The telecommunications apparatus of claim 1 in which the single bit quantizer uses a decision statistic summed over samples of a received signal to determine whether a symbol is present.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

6. (Original) The telecommunications apparatus of claim 5 in which the decision statistic uses a sum of a constant plus a function that depends on estimated probabilities of samples of the received signal being greater or less than a threshold.

7. (Original) The telecommunications apparatus of claim 1 used with a 2-ary encoding/modulation scheme.

8. (Original) The telecommunications apparatus of claim 7 in which the single bit quantizer analyzes a weighted sum of samples from a received signal to determine whether a symbol has been received.

9. (Original) The telecommunications apparatus of claim 1 used with a M-ary encoding/modulation scheme.

10. (Original) The telecommunications apparatus of claim 9 in which the single bit quantizer determines presence of a symbol in a received signal based on a maximum weighted sum of samples of a received signal.

11. (Original) The telecommunications apparatus of claim 1 in which the single bit quantizer operates using a search bin to determine presence of a symbol in a received signal, and shifts a search bin based on the estimated probability of a corresponding sample at the nth delay.

12. (Original) The telecommunications apparatus of claim 11, in which the single bit quantizer uses a clock synchronizing scheme using metrics with a set of tracking rules, where the metrics are based on a sum of magnitudes of a set of samples of the estimated probability of a corresponding sample at the nth delay.

13. (Currently amended) The telecommunications apparatus of claim 12 in which the tracking rules are:

If $Q_{sL}>Q_{sH}$ then the search bin is shifted to the left, corresponding to decreased delay;

If $Q_{sL}<Q_{sH}$ then the search bin is shifted to the right, corresponding to increased delay;

If $Q_{sL}=Q_{sH}$ then the search bin is not shifted; and

If $Q_s<$ a constant threshold then tracking is considered lost, and the single bit quantizer chooses between extending the search, reacquisition of a signal or repeating a search;

and in which Q_{sL} is ~~based on the~~ computed as a sum across a first portion of the set of samples, and Q_{sH} is ~~based on the~~ computed as a sum across a second portion of the set of samples, and Q_s is [[the]] computed as a sum across both the first and second portions of the set of samples.

14. (Currently amended) The telecommunications apparatus of claim 1 in which pilot tracking data used for deciding whether a sample represents a symbol 1 [[or not]] is [[used]] further augmented with decision feedback data samples from samples of a received signal.

15. (Currently amended) The telecommunications apparatus of claim 1 in which the receiver uses a single bit quantized pilot signal to estimate propagation channel characteristics, whereby the weighting ~~coefficients may be~~ factors are derived for the Rake receiver by operating on received data samples.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

16. (New) The telecommunications apparatus of claim 13 in which the estimated probability is represented by p(n) and the metrics Q_{sL}, Q_{sH}, and Q_s are computed as:

$$Q_{sL} = \sum_{n=1}^{N_s/2} \left(p(n) - \tfrac{1}{2}\right)^2 ;$$

$$Q_{sH} = \sum_{N_s/2+1}^{N_s} \left(p(n) - \tfrac{1}{2}\right)^2 ; \text{ and}$$

$$Q_s = Q_{sL} + Q_{sH} .$$

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100